

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 2 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

```

=====
LOXODONTA AFRICANA (no subsp)      Sex: Female      Acc. #: 101038
African elephant                  Age: 22Y 10M Est Birth: 26.Sep.1985
Name: MIKKI
=====

```

.....2003...

- 19.Aug test result was negative.
 A reading of 500,000 RLU or greater is considered positive.
 Accession #: 262292
 Sample ID: 6/19/03
 NVSL #: 791767
 Case #:035200
 Animal ID: 101038
 RESULTS
 Culture: No isolation made.
 Nucleic Acid Amplification: The MTD result was 2956 RLU. The MTD
 testresult was negative.
 A reading of 500,000 RLU or greater is considered positive. (CUL)
- 21.Aug PROBLEM: physical examination
 cracked/broken nail
 101038
 Annual Physical Exam
 S Eyes, ears, teeth, skin, rectum, and vulva appear normal. The
 past wound on the nasal septum in the trunk is healed. There are
 cracks in the nails of several digits but none of these are causing
 clinical problems.
 O Temperature via fresh fecal ball is 98.2 F. (normal per Fowler 4).
 Could not auscult heart or lungs but breathing appears normal. Blood
 for the annual exam was collected last week (14 Aug 03).
 A Nail cracks can be caused by multiple factors. Rx goal is to stop
 spread into the cuticle, keep them clean to avoid abscess formation,
 and allow them to grow out.
 P Continue current nail care. (RBB)
- 28.Aug Blood sample:
- 1.Sep Blood sample:
 8.Sep Blood sample:
 15.Sep Blood sample:
 22.Sep Blood sample:
 23.Sep PROBLEM: johne's disease screening
 S Fecal sample collected and submitted for Johne's Testing.
 O 1 Tablespoon feces was collected and sent on ice packs to the
 University of Wisconsin Johne's Testing center for Johne's
 Culture(Radiometric).
 A
 P Await results. (ERH)
- 29.Sep Blood sample:
- 1.Oct Blood sample:
 2.Oct Blood sample:

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 3 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

```
=====
LOXODONTA AFRICANA (no subsp)      Sex: Female      Acc. #: 101038
African elephant                  Age: 22Y 10M Est Birth: 26.Sep.1985
Name: MIKKI
=====
```

.....2003...

```
3.Oct Blood sample:
4.Oct Blood sample:
5.Oct Blood sample:
6.Oct Blood sample:
13.Oct Blood sample:
      Hemolysis
20.Oct Blood sample:
27.Oct Blood sample:
28.Oct Urine sample analysis results: ( 8:45.0)
31.Oct Urine sample analysis results: ( 9:20.0)
```

3.Nov Blood sample:

10.Nov Blood sample:

Hemolysis

17.Nov Blood sample:

24.Nov Blood sample:

26.Nov PROBLEM: lameness - REAR LEG (LEFT) (onset)

localized swelling - REAR LEG (LEFT) (onset)

S Area supervisor Dave reports that Mikki is mildly lame in the left rear leg this morning. He speculates that perhaps elephant was roughed up by Punch. Although chained up overnight, the elephants shared a stall. Later it was determined that the lameness is likely venipuncture related as there was an area of soft tissue swelling near the venipuncture site. Staff bled animal from this site 2 days prior. Exam reveals some localized swelling in the medial left rear leg, below the stifle. The area is firm and slightly warm.

O

A Suspect swelling is due to soft tissue inflammation and/or hematoma associated with blood collection attempts.

P Elephant area will monitor. Advised staff to spray area with cool water to help bring down the inflammation. Staff will give this leg a rest (no blood collection from this leg until healed). (ZSG)

1.Dec PROBLEM: lameness - REAR LEG (LEFT) (resolved)

localized swelling - REAR LEG (LEFT) (resolved)

Blood sample:

John's Radiometric Culture Results Form

John's Testing Center

University of Wisconsin

School of Veterinary Medicine

2015 Linden Dr., West Rm 4230

Madison, WI 53706-1102

608-265-6463

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 4 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

```

=====
LOXODONTA AFRICANA (no subsp)      Sex: Female      Acc. #: 101038
African elephant                  Age: 22Y 10M Est Birth: 26.Sep.1985
Name: MIKKI
=====

```

.....2003...

```

Accession #: 39777
Sample Type: Feces
Species: Exotics
Date Received: 9/24/2003
Date Completed: 11/20/2003
Collection: 9/23/03
Animal ID: 101038 Elephant Mickey
RESULT: Negative
Results Certification: Gail Thomas 12/1/03
Lab Comments: Not in HPC (CUL)
Hx Lameness and swelling in left rear leg is resolved. (ZSG)
8.Dec Blood sample:
15.Dec Blood sample:
22.Dec Blood sample:
29.Dec Blood sample:

```

.....2004...

```

5.Jan Blood sample:
12.Jan Blood sample:
15.Jan Blood sample:
19.Jan Blood sample:
20.Jan Blood sample:
Hemolysis
21.Jan Blood sample:
22.Jan Blood sample:
23.Jan Blood sample:
24.Jan Blood sample:
25.Jan Blood sample:
26.Jan Blood sample:
Blood sample: ( : 0.1)
27.Jan Blood sample:
28.Jan Blood sample:
Hemolysis
29.Jan Blood sample:
30.Jan Blood sample:
31.Jan Blood sample:

1.Feb Blood sample:
2.Feb Blood sample:
Hemolysis

```

Blood sample: (: 0.1)
Hemolysis

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 5 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

-2004....
- 3.Feb Blood sample:
- 4.Feb Blood sample:
- 5.Feb Blood sample:
- 6.Feb Blood sample: (: 0.1)
- 7.Feb Blood sample: (: 0.1)
- 8.Feb Hemolysis
- 9.Feb Blood sample:
- 10.Feb Blood sample:
- 11.Feb Blood sample:
- 12.Feb Blood sample:
- 13.Feb Blood sample:
- 14.Feb Blood sample:
- 15.Feb Blood sample:
- 16.Feb Hemolysis
- 17.Feb Blood sample:
- 18.Feb Blood sample:
- 19.Feb Blood sample:
- 20.Feb Blood sample:
- 21.Feb Blood sample:
- 22.Feb Blood sample:
- 23.Feb Blood sample:
- 24.Feb Blood sample:
- 25.Feb Blood sample:
- 26.Feb Blood sample:
- 27.Feb Blood sample:
- 28.Feb Blood sample:
- 29.Feb Blood sample:
- 1.Mar Blood sample:
- 8.Mar Blood sample:
- 15.Mar Blood sample:
- 22.Mar Blood sample:
- 29.Mar Blood sample:
- 5.Apr Blood sample:
- 12.Apr Blood sample:
- 19.Apr Blood sample:

20.Apr Blood sample:
 21.Apr Blood sample:
 22.Apr Blood sample:

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 6 -

Medical History Report - Summary for Individual Specimen
 LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2004....

23.Apr Blood sample:
 24.Apr Blood sample:
 25.Apr Blood sample:
 26.Apr Blood sample:
 27.Apr Blood sample:
 28.Apr Blood sample:
 29.Apr Blood sample:
 30.Apr Blood sample:

1.May Blood sample:
 2.May Blood sample:
 3.May Blood sample:
 4.May Blood sample:
 5.May Blood sample:
 6.May Blood sample:
 7.May Blood sample:
 8.May Blood sample:

Hemolysis

9.May Blood sample:
 10.May Blood sample:
 11.May Blood sample:
 12.May Blood sample:
 13.May Blood sample:
 14.May Blood sample:
 15.May Blood sample:
 16.May Blood sample:
 17.May Blood sample:
 18.May Blood sample:
 19.May Blood sample:
 20.May Blood sample:

Hemolysis

21.May Blood sample:
 22.May Blood sample:
 23.May Blood sample:
 24.May Blood sample:

Hx Staff reports Mikki may have been stung by a bee in her trunk. She displayed the same behavior as she did a few years ago when staff observed a bee going in, stinging, and exiting her trunk. Elephant shook trunk and rubbed it on objects. Staff observed Mikki for about 45 minutes and symptoms improved.

Monitor. (RBB)
 25.May Blood sample:
 26.May Blood sample:
 Hemolysis

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 7 -

Medical History Report - Summary for Individual Specimen
 LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2004....

27.May Blood sample:
 28.May Blood sample:
 29.May Blood sample:
 30.May Blood sample:
 31.May Blood sample:

1.Jun Blood sample:
 2.Jun Blood sample:
 3.Jun Blood sample:
 4.Jun Blood sample:
 7.Jun Blood sample:
 14.Jun Blood sample:
 21.Jun Blood sample:

Parasitology examination: (ROUTINE EXAMINATION) Fecal sample.
 NO PARASITES SEEN

28.Jun Blood sample:

5.Jul Blood sample:
 12.Jul Blood sample:

13.Jul PROBLEM: culture - rectum (onset)
 annual examination
 PHOTOGRAPH - WHOLE BODY
 trunk wash (onset)
 vaccination - rabies
 vaccination - Tetanus toxoid
 Purpose/Problem: Routine vaccination.
 Vaccination: RABIES VACCINE (KILLED) 2ml IM SID
 TETANUS TOXOID 1ml IM SID

Antech Diagnostics

Accession #: INBC00718792

Received: 7/14/04

Reported: 7/24/04

Source: Fecal

Final Report: No Salmonella sp. isolated after 48 hrs. No
 bacterial pathogens isolated after 48 hrs. No pathogenic anaerobes
 isolated, no Campylobacter isolated.

National Veterinary Services Laboratory, Ames, Iowa

NVSL ID: 1048604

Case#: 047498

Mycobacterial culture (trunk wash): No isolation made (CUL)
 S Elephant was manually restrained to collect the first of a series
 of three trunk washes for annual tuberculosis screen.
 O 40+ mls were recovered and frozen.
 A

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 8 -

Medical History Report - Summary for Individual Specimen
 LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2004....

13.Jul P Repeat trunk wash on July 15th and July 16th. (ERH)
 S Elephant was chained indoors for annual examination. Normal body
 condition and integument. Normal eyes, ears, and temporal glands.
 Normal respirations. Feet appear healthy. Some toenails have some
 superficial cracks but are clinically insignificant at this time.
 One toenail on the right front foot has a crack from the cuticle to
 the tip. Pink vaginal mucosa could not be observed. Upper dental
 arcades are normal. Lowers could not be visualized. A rectal swab
 was obtained (sample 1 in a series of 3 collections for Salmonella
 sp. culture). After disinfecting the skin, rabies and tetanus
 toxoid vaccination was administered in the left rear leg (hamstring
 region). Elephant was unchained and moved out to the yard.
 Photographs of the animal were obtained (front, right side, left
 side).

O Temperature of the center of a freshly passed fecal bolus - 96.4
 F.

A Elephant appears healthy.

P Blood and urine will be collected tomorrow.

Rx: RABIES VACCINE (KILLED) 2 ml IM SID for 1 day. (12465)

Rx: TETANUS TOXOID 1 ml IM SID for 1 day. (277333A) (ZSG)

15.Jul PROBLEM: blood collection - ear vein
 Serology - west Nile Virus
 increased chemistry result - AMYLASE (onset)
 increased chemistry result - LIPASE (onset)
 hyperosmolality (onset)
 URINE COLLECTION

Blood sample: (EDTA) (8:30.0) Hematology results.

WBC:10.10 *10³/UL; HCT: 43.0%;

Blood sample: (8:30.1) Chemistry results.

BUN:5 MG/DL;

Blood sample: (8:30.2)

Blood sample: (8:30.3)

Blood sample: (8:30.4)

Blood sample: (8:30.5)

Urine sample analysis results: (9:15.0)

Antech Diagnostics

Accession #: INBC00723587

Received: 7/16/04

MedARKS%20Reports[1]

Reported: 7/24/04
Source: Rectal
Final Report: No Salmonella sp. isolated after 48 hrs. No bacterial pathogens isolated after 48 hrs. No pathogenic anaerobes isolated, no Campylobacter isolated.
National Veterinary Services Laboratory, Ames, Iowa

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 9 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2004....

15.Jul NVSL ID: 1048605
Case#: 047499
Mycobacterial culture (trunk wash): No isolation made (CUL)
S Elephant was manually restrained for 2nd trunk wash, blood and urine collection for annual exam.
O
A
P Complete the 3rd trunk wash on 16 July 2004. (ERH)

16.Jul PROBLEM: culture - rectum (resolved)
trunk wash (resolved)
increased chemistry result - AMYLASE (resolved)
increased chemistry result - LIPASE (resolved)
hyperosmolality (resolved)

Antech Diagnostics
Accession #: INBC00726005
Received: 7/17/04
Reported: 7/24/04
Source: Rectal
Final Report: No Salmonella sp. isolated after 48 hrs. No bacterial pathogens isolated after 48 hrs. No pathogenic anaerobes isolated, no Campylobacter isolated.
National Veterinary Services Laboratory, Ames, Iowa
NVSL ID: 1048606
Case#: 047500
Mycobacterial culture (trunk wash): No isolation made (CUL)
S Elephant was manually restrained for 3rd trunk wash.
O
A
P Samples were immediately frozen until shipment to NVSL for mycobacterium culture the week of 18 July 2004. Await results. (ERH)
CBC & Chem from blood collected 15 Jul 04 are normal except for increased amylase (8820 IU/L, 3.7 s.d.), lipase (25 IU/L, 2.5 s.d.), and calc osmolality (272 mOsm/kg, 3.25 s.d.). Urinalysis is normal (Ca carbonate crystals are normal in elephants).
In most species, amylase and lipase are of concern only when they are a few to several times elevated, therefore, elevations in these are not likely clinically significant. Since other parameters are

normal, osmolality elevation is not likely clinically significant.
(RBB)

- 19.Jul Blood sample:
- 20.Jul Protein electrophoresis from blood collected 15 Jul 04 is normal per ISIS reference ranges. (RBB)
- 22.Jul Lepto serology results.
S

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 10 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

```
=====
LOXODONTA AFRICANA (no subsp)      Sex: Female      Acc. #: 101038
African elephant                  Age: 22Y 10M Est Birth: 26.Sep.1985
Name: MIKKI
=====
```

-2004....
- 22.Jul O Blood sample collected 15 July 04 shows negative titers for L. pomona, icterohemorrhha, canicola, grippotyphosa, hardjo, bratislava.
A
P (RBB)
 - 26.Jul Blood sample:
S Encephalomyocarditis (EMC) virus serology results from blood collected 15 July 2004.
O EMC virus neutralization = NEGATIVE (1:32)
A
P (ZSG)
 - 27.Jul S Serial rectal culture results from samples collected 13, 15, and 16 July 2004.
O All three samples were NEGATIVE for Salmonella sp., bacterial pathogens, pathogenic anaerobes, and Campylobacter sp.
A
P (ZSG)
 - 1.Aug PROBLEM: johne's disease screening (onset)
 - 6.Aug PROBLEM: laceration - right rear foot (onset)
S Area supervisor Dave reports that elephant was found this morning with a flap of tissue hanging from the lateral aspect of the right rear foot (sole margin). Elephant staff trimmed the tissue away and cleaned the foot.
O
A Wound is superficial and seems minor.
P Elephant area staff will monitor. Recheck in a week. (ZSG)
 - 7.Aug Blood sample:
 - 8.Aug Blood sample:
 - 9.Aug Blood sample:
 - 10.Aug Blood sample:
S Serum vitamin E results from blood collected 15 July 2004.
O 1.38 mcg/ml
A Per 1999 Zoo Biology article (Circulating levels of alpha-tocopherol and retinol in free-ranging African elephants), wild African elephant (n=70) serum vitamin E was found to be 0.613 +/- 0.271 mcg/ml. Per consultation with Dr. Ellen Dierenfeld,

acceptable range is between 0.5 - 1.5 mcg/ml, so current level is okay. Dr. Dierenfeld also says that MSU lab tends to report higher results compared to other labs.

P Continue with current dose of vitamin E supplementation. (ZSG)

- 11.Aug Blood sample:
- 12.Aug Blood sample:
- 13.Aug Blood sample:
- 14.Aug Blood sample:

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 11 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2004...

- 16.Aug PROBLEM: laceration - right rear foot (resolved)
Blood sample:
S West Nile virus serology results from blood collected 15 July 2004.
O NEGATIVE at 1:40 (serum neutralization)
A No evidence of exposure to WNV.
P
Addendum - Area supervisor Dave reports that laceration on right rear foot is a non-issue (no lameness, can hardly find where injury was). Resolve. (ZSG)
- 17.Aug Blood sample:
- 18.Aug Blood sample:
- 20.Aug Blood sample:
- 21.Aug Blood sample:
- 23.Aug PROBLEM: body weight monitoring
Blood sample:
weight: 3493 kg (7699 Lb)
- 29.Aug Blood sample:
- 30.Aug Blood sample:
- 31.Aug Blood sample:

- 1.Sep PROBLEM: johne's disease screening (resolved)
Blood sample:
Johne's Radiometric Culture Results Form
Johne's Testing Center
University of Wisconsin
School of Veterinary Medicine
2015 Linden Dr., West Rm 4230
Madison, WI 53706-1102
608-265-6463
Accession #: 45130
Sample Type: Feces
Species: Exotics
Date Received: 9/2/04
Date Completed: 10/29/04

Collection: 9/1/04
Animal ID: 101038 elephant
RESULT: NEGATIVE
Results Certification: Gail Thomas 11/2/04
Lab Comments: Not in HPC (CUL)
S Fecal sample was collected and submitted for John's Testing.
O One tablespoon feces was collected and sent on ice packs to the University of Wisconsin John's Testing center for John's Culture(Radiometric).

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 12 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2004....

- 1.Sep A
- P Await results. (VRC)
- 2.Sep Blood sample:
- 3.Sep Blood sample:
- 4.Sep Blood sample:
- 5.Sep Blood sample:
- 6.Sep Blood sample:
- 7.Sep Blood sample:
- 8.Sep Blood sample:
- 10.Sep Blood sample:
- 11.Sep Blood sample:
- 12.Sep Blood sample:
- 13.Sep Blood sample:
- 20.Sep Blood sample:
- 23.Sep S Mycobacterial culture results from trunk washes performed 13 July, 15 July, and 16 July 2004.
- O No isolation made.
- A
- P Repeat trunk washes annually. (ZSG)
- 27.Sep Blood sample:
- 4.Oct Blood sample:
- 11.Oct Blood sample:
- 18.Oct Blood sample:
- 25.Oct Blood sample:
- 26.Oct Blood sample:
- 27.Oct Blood sample:
- 28.Oct Blood sample:
- 29.Oct Blood sample:
- 30.Oct Blood sample:
- 31.Oct Blood sample:
- 1.Nov Blood sample:

2.Nov Blood sample: (: 0.1)
 3.Nov Blood sample:
 4.Nov Blood sample:
 5.Nov Blood sample:
 6.Nov Blood sample:
 7.Nov Blood sample:
 8.Nov Blood sample:
 9.Nov Blood sample: (: 0.1)
 9.Nov Blood sample:

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 13 -

Medical History Report - Summary for Individual Specimen
 LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2004....

9.Nov Radiometric culture results from feces collected 1 Sep 04 are
 negative. (RBB)
 10.Nov Blood sample:
 11.Nov Blood sample:
 12.Nov Blood sample:
 13.Nov Blood sample:
 14.Nov Blood sample:
 15.Nov Blood sample:
 Blood sample: (: 0.1)
 16.Nov Blood sample:
 17.Nov Blood sample:
 18.Nov Blood sample:
 19.Nov Blood sample:
 21.Nov Blood sample:
 22.Nov Blood sample:
 23.Nov Blood sample:
 24.Nov Blood sample:
 25.Nov Blood sample:
 26.Nov Blood sample:
 27.Nov Blood sample:
 Blood sample: (: 0.1)
 28.Nov Blood sample:
 29.Nov Blood sample:
 30.Nov Blood sample:
 Blood sample: (: 0.1)

 1.Dec Blood sample:
 2.Dec Blood sample:
 3.Dec Blood sample:
 4.Dec Blood sample:
 5.Dec Blood sample:
 6.Dec Blood sample:
 7.Dec Blood sample:

MedARKS%20Reports[1]

8.Dec Blood sample:
9.Dec Blood sample:
10.Dec Blood sample:
11.Dec Blood sample:
12.Dec Blood sample:
13.Dec Blood sample:
14.Dec Blood sample:
15.Dec Blood sample:
16.Dec Blood sample:
17.Dec Urine sample analysis results: (9:30.0)
17.Dec Blood sample:

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 14 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2004....
17.Dec Urine sample analysis results: (9:20.0)
18.Dec Blood sample:
19.Dec Blood sample:
20.Dec Blood sample:
21.Dec Blood sample:
21.Dec Urine sample analysis results: (9:00.0)
22.Dec Blood sample:
23.Dec Blood sample:
25.Dec Blood sample:
27.Dec Blood sample:
Parasitology examination: (ROUTINE EXAMINATION) Fecal sample.
NO PARASITES SEEN

.....2005....
3.Jan Blood sample:
10.Jan Blood sample:

10.Feb Blood sample:
11.Feb Blood sample:
12.Feb Blood sample:
13.Feb Blood sample:
14.Feb Blood sample:
15.Feb Blood sample:
16.Feb Blood sample:
17.Feb Blood sample:
18.Feb Blood sample:
19.Feb Blood sample:
20.Feb Blood sample:
21.Feb Blood sample:
22.Feb Blood sample:
23.Feb Blood sample:

24.Feb Blood sample:
 25.Feb Blood sample:
 26.Feb Blood sample:
 27.Feb Blood sample:
 28.Feb Blood sample:

1.Mar Blood sample:
 2.Mar Blood sample:
 3.Mar Blood sample:
 4.Mar Blood sample:
 5.Mar Blood sample:
 6.Mar Blood sample:

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 15 -

Medical History Report - Summary for Individual Specimen
 LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2005...

7.Mar Blood sample:
 8.Mar Blood sample:
 14.Mar Blood sample:

Ultrasound exam by Dr. Schmitt reveals a 1.2 cm diam follicle on the L ovary. There is a small follicle on the R ovary. (RBB)

15.Mar PROBLEM: artificial insemination (onset)
 Urine sample analysis results: (8:35.0)
 Purpose/Problem: artificial insemination

RX: GONADORELIN HYDROCHLORIDE 200mcg IM SID (.057 MCG/kg)

Semen Information for AI

Semen collection at Lion Country Safari resulted in a 500 ml ejaculate with no sperm.

Semen collection at Jacksonville Zoo resulted in an ejaculate very concentrated with sperm but none were motile. Dr. Schmitt has found that collected ejaculates often do not have all of the secretions from accessory sex glands in them. One of these secretions is responsible for initiating motility.

Donor is Maclean from Disney's Animal Kingdom. Semen was collected this am and diluted/extended 1:1 with HEPES for an end volume of 85 ml. Sperm had 60-70% motility before shipment and 35% motility after shipment prior to insemination. for the insemination, the semen sample was preceded by 30 ml HEPES solution and was followed with 10 - 15 mls HEPES solution. (RBB)

Hx AI #1 with Dr. Dennis Schmitt, Tracy Northcutt, Dr. Jeff Proudfoot, and Dr. Jan Ramer. After manual removal of feces from the rectum and whole body wash, the vulvar region and inner thighs were repeatedly scrubbed with chlorhexidine and rinsed with hose water. Final rinses were done with distilled water via pump sprayer. After several cycles of scrubbing and rinsing, Mikki was lead into a stall and stood on two tubs (front feet on one tub, rear feet on a second tub). The elephant was kept occupied with hay and

treats. The common urogenital tract was lubricated by insertion of an arm (wearing a sterile rectal sleeve covered in sterile lubricant). Mikki tolerated this well. A sterile tube with a deflated cuff was passed up into the urogenital tract and advanced until it could be seen through the skin a few inches ventral to the anus. The tube did NOT curve up and around the pelvic rim. The cuff was inflated on the tube and a flexible endoscope was passed up into the tube and into the urogenital tract. The tube was advanced and the urogenital tract was explored until the urethral papilla could be visualized adjacent to three openings (the central hymen patent to the vagina flanked by blind canals). The tip of the endoscope was advanced to the point of the hymen. Some clear mucous could be seen streaming out of the hymen opening. A tube was then

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 16 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2005...

15.Mar advanced up the port of the endoscope and passed through the hymen into the vagina. Fresh semen from Disney's Animal Kingdom was infused along with HEPES solution (buffer) before and after the semen. The tube, endoscope, and tube were removed immediately following the insemination. Some fluid dripped from the vulva following the procedure (unclear whether this was lubricant, mucous, semen, or HEPES solution). The procedure lasted about 12-15 minutes from lubrication of the urogenital tract and placement of the tube, to insemination and completion. Following insemination, the left triceps was prepped and 200 mcg (4.0 ml) Factrel (gonadorelin hydrochloride - GnRH) was administered intramuscularly to promote ovulation.

Rx: GONADORELIN HYDROCHLORIDE 200 MCG IM SID for 1 day. (ZSG)

16.Mar PROBLEM: artificial insemination (resolved)

Urine sample analysis results: (9:15.0)

AI #2 with Dr. Dennis Schmitt, Tracy Northcutt, Dr. Jeff Proudfoot, Dr. Jan Ramer.

S Endoscope was entered for a length of 120 cm for visualization of the hymen. INsemination was performed as was yesterday. ET like tube was advanced & placed to the level of the pelvic inlet. The endoscope was advanced through th ET like tube and in a short time, the urethral mound and hymen was visualized. the insemination catheter was threaded through the central hole in the hymen and insemination was performed.

O Semen data: Collections from bull elephants at Pittsburgh and Jacksonville resulted in ejaculate with nonmotile sperm. Collection from a bull at Lion Country Safari resulted in ejaculate with no sperm.

Semen used was a frozen sample collected & frozen from Artie at Scott Riddle's facility on 21 Jul 04. Dr. Schmitt has tested thaws

MedARKS%20Reports[1]

from this collection and has recorded 60% motility in the lab and 50% motility in the field. When frozen, the sample was extended with Triadyl + 4% DMSO. Tube #903123 Ele 06. In preparation for insemination, 25 ml of HEPES was added to 25 mls of frozen semen. As was yesterday during the insemination this sample was lead & followed with HEPES flushes.

A

Review of LH in past few days:

From the LH data, Dr. Schmitt suspects Mikki probably ovulated in her own 16 Mar 05 AM and that she would have even if she did not receive the GNRH yesterday PM. LH peaked this AM.

P Dr. Schmitt recommends continuing to collect daily blood for a few more days. He may ask to use this blood in future research. Continue daily blood collection to 3/20. Earliest projected LH1

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 17 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2005...

16.Mar using Mikki's past data is 5/27. Restart daily blood collection on 5/16, if needed.

Options for pregnancy diagnosis are transrectal ultrasound of the uterus at 10 - 12 weeks (5/25-6/8) and/or serum progesterone. Progesterone should stay elevated longer than the typical cycle (14 weeks for Mikki) if elephant is pregnant. There can be drop in progesterone at 8 - 10 weeks (5/11-5/25) in pregnancy. Dr. Schmitt recommends not making any changes in management that might be a stressor during that 8 - 10 weeks. We may want to begin sending blood for progesterone every week or two beginning at 4 weeks from insemination (4/13). Dr. Schmitt suspects pregnancy if serum progesterone remains high for 10-12 weeks. He usually does not officially announce pregnancies (media, etc.) until progesterone stays elevated for 16 weeks (7/6). If progesterone stays elevated for > 26 weeks (9/14), there is a good chance the elephant will maintain the pregnancy.

Dr. Schmitt recommends that if pregnant, Mikki does not gain more than about 500 lbs during the pregnancy. (RBB)

17.Mar Urine sample analysis results: (9:30.0)

18.Mar Urine sample analysis results: (9:30.0)

21.Mar Blood sample:

28.Mar Blood sample:

4.Apr Blood sample:

11.Apr Blood sample:

27.May Hx Post-insemination progesterone data reveals that elephant appears to be going through her normal estrus cycle. Insemination attempt appeared to fail and elephant is NOT pregnant. Next LH2 is

estimated to be in late June 2005. (ZSG)

- 20.Jun Urine sample analysis results: (13:45.0)
Parasitology examination: (ROUTINE EXAMINATION) Fecal sample.
NO PARASITES SEEN
- 21.Jun Urine sample analysis results: (9:00.0)
- 22.Jun Urine sample analysis results: (8:50.0)
- 23.Jun PROBLEM: artificial insemination
Urine sample analysis results: (7:45.0)
Urine sample analysis results: (9:10.0)
AM
Ultrasound exam shows a 1 cm follicle on the L ovary that is flattening. There are small CL's and smaller follicles on both ovaries.
LH assay shows LH may be rising.

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 18 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2005...

- PM
Insemination:
The insemination for all 3 days was the same as described in March 05, except that the Indianapolis Zoo vets were unable to attend. Semen source Artie from Riddle collected fresh this AM. Good motility on arrival (70%). Volume of approx 135 ml inseminated. Indianapolis attempted to collect but got a highly concentrated sample with no motility. Did not send this sample. (RBB)
- 24.Jun PROBLEM: artificial insemination
Urine sample analysis results: (7:40.0)
Rx: GONADORELIN HYDROCHLORIDE 200mcg IM SID
AM
Could not visualize L ovary due to presence of bowel loops. R ovary is as was seen yesterday. Try again this PM. LH assay shows LH has not begun to rise yet.
PM
Ultrasound shows a 1.44 cm follicle on the L ovary that is egg shaped. In house LH assay shows LH peak was tonight at approx 1.5. Used freshly collected semen samples from:
Riddle (Artie): Riddle tried to collect all 4 bulls with no sample. When Artie was again collected, he gave 20 ml 80% motility on collection. Upon arrival, motility was still excellent.
Pittsburgh: 12 ml, 60% motility when collected. Upon arrival, 12 ml 65-70% motility.
Rx: GONADORELIN HYDROCHLORIDE 200 mcg IM SID for 1 dose. (RBB)
- 25.Jun PROBLEM: artificial insemination
pregnancy (onset)
Urine sample analysis results: (8:30.0)

AM

Ultrasound exam shows the L ovary ovulated overnight as the follicle previously seen is no longer there. This corresponds to yesterday PM's LH peak. Dr. Schmitt suspects the elephant ovulated on her own independent of the GNRH injection.

PM

Indianapolis Zoo transported fresh semen sample from MacClean. Upon collection, motility was 80% and total volume was about 45 ml. The ejaculate was collected a bit after the manual manipulation of the male, when he was relaxed. Upon arrival at LZG, two of the bags had motility of 80% and one of the bags had motility of 15-20%. Total volume after extending was 200 ml, all delivered during insemination.

Insemination was as described for 23 Jun 05. (RBB)

8.Aug PROBLEM: blood collection

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 19 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2005....

8.Aug

culture - fecal (onset)
annual examination
johne's disease screening
PHOTOGRAPH - WHOLE BODY
trunk wash (onset)
URINE COLLECTION

Blood sample: (EDTA) (8:45.0) Hematology results.

WBC:8.40 *10³/UL; HCT: 35.0%;

Blood sample: (EDTA) (8:45.1) Chemistry results.

BUN:7 MG/DL;

Blood sample: (8:45.2)

Blood sample: (8:45.3)

Blood sample: (8:45.4)

Blood sample: (8:45.5)

Urine sample analysis results: (9:00.0)

Antech Diagnostics

Accession #: INBC01599220

Received: 10 August 2005

Reported: 22 August 2005

Source: feces

No Salmonella sp. isolated at 48 hours.

No pathogenic anaerobes isolated at 11 days.

No Campylobacter sp. isolated at 11 days.

Johne's Radiometric Culture Results Form

Johne's Testing Center

University of Wisconsin

School of Veterinary Medicine

2015 Linden Dr., West Rm 4230
 Madison, WI 53706-1102
 608-265-6463
 Accession #: 49290
 Sample Type: Feces
 Species: Exotics
 Date Received: 8/10/05
 Date Completed: 10/06/05
 Collection: 8/8/05
 Animal ID RESULT
 Bongo 101428 Negative
 Addax Herd Negative
 Rhino Herd Negative
 Elephant 100479 Negative
 Elephant 101038 Negative
 Camel 101158 Negative
 Camel 101159 Negative

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 20 -

Medical History Report - Summary for Individual Specimen
 LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2005...

8.Aug Bongo 101780 Negative
 Results Certification: Gail Thomas 10/7/05
 Lab Comments: Not in HPC
 National Veterinary Services Laboratory, Ames, Iowa
 NVSL ID: 1319199
 Case#: 0510097
 Accession # 396087
 Mycobacterial culture (trunk wash): No isolation made (CUL)
 Fecal sample collected and submitted to University of
 Wisconsin-Madison for Johne's culture. (VRC)
 S Elephant was chained indoors for annual examination. Normal body
 condition, integument, and trunk. Normal eyes, ears, and temporal
 glands. Normal respirations. Feet appear healthy. Some toenails
 (particularly rear feet) have some vertical cracks but none appear
 infected. Urogenital track was not inspected. Upper dental arcades
 are normal. Brief glimpses of lower molars reveal no abnormalities.
 Mammary glands palpate normally. Fecal culture obtained (sample 1
 in a series of 3 collections for salmonella sp. culture). Elephant
 was unchained and moved out to the yard. Photographs of the animal
 were obtained (front, right side, left side). Elephant area staff
 collected blood and urine earlier in the day.
 O Temperature of the center of a freshly passed fecal bolus - 97.2
 F.
 A Elephant appears healthy.
 P Await laboratory results. (ZSG)
 9.Aug Antech Diagnostics

Accession #: INBC01599248
 Received: 10 August 2005
 Reported: 22 August 2005
 Source: feces
 No Salmonella sp. isolated at 48 hours.
 No pathogenic anaerobes isolated at 11 days.
 No Campylobacter sp. isolated at 11 days.
 National Veterinary Services Laboratory, Ames, Iowa
 NVSL ID: 1319200
 Case#: 0510098
 Accession # 396087
 Mycobacterial culture (trunk wash): No isolation made (CUL)

10.Aug

PROBLEM: culture - fecal (resolved)
 trunk wash (resolved)

Antech Diagnostics
 Accession #: INBC01602675
 Received: 11 August 2005
 Reported: 24 August 2005

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 21 -

Medical History Report - Summary for Individual Specimen
 LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2005...

Source: feces
 No Salmonella sp. or Shigella sp. isolated at 48 hours.
 Clostridium sp. isolated.
 No Campylobacter sp. isolated at 10 days.
 National Veterinary Services Laboratory, Ames, Iowa
 NVSL ID: 1319202
 Case#: 0510099
 Accession # 396087
 Mycobacterial culture (trunk wash): No isolation made (CUL)

11.Aug S Preliminary laboratory results from samples collected 8 August 2005.
 O
 A CBC and chemistries are normal, including fibrinogen. Urinalysis reveals concentrated, alkaline urine with a normal protein:creatinine ratio. Sediment exam reveals too numerous to count calcium oxalate crystals.
 P Await remaining test results. (ZSG)

12.Aug S Protein electrophoresis results from sample collected 8 August 2005.
 O
 A Results interpreted as normal except for decreased alpha 1 globulins (unclear clinical significance).
 P (ZSG)

25.Aug S Results of three consecutive day fecal culture.
 O NEGATIVE for Salmonella sp. A Clostridium sp. was isolated on

the third collection from both elephants.
 A Clostridial isolates are likely normal flora. Although elephants have died due to infections with Clostridium tetani and C. septicum, these are typically from wound contamination/infections, not primary GI disease. Elephants have also died from botulism (C. botulinum), however this is related to ingestion of contaminated feeds.
 P (ZSG)

- 14.Sep S Leptospirosis serology panel results from blood collected 8 August 2005.
 O NEGATIVE titers to Leptospira pomona, L. icterohaemorrhagiae, L. canicola, L. grippityphosa, and L. hardjo.
 A
 P (ZSG)
- 15.Sep S Serum vitamin E results from blood collected 8 August 2005.
 O 1.30 mcg/ml
 A Normal healthy serum level.
 P Continue with current dose of vitamin E supplementation. (ZSG)
- 19.Sep S West Nile virus serology results from blood collected 8 August

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 22 -

Medical History Report - Summary for Individual Specimen
 LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

-2005....
- 19.Sep 2005.
 O NEGATIVE at 1:20 (serum neutralization) for both WNV and St. Louis encephalitis virus.
 A No evidence of exposure to WNV.
 P (ZSG)
- 29.Sep S Encephalomyocarditis (EMC) virus serology results from blood collected 8 August 2005.
 O EMC virus neutralization = NEGATIVE (1:32)
 A
 P (ZSG)
- 7.Oct Results of Johne's radiometric culture of feces collected 8 Aug 05 is negative. (RBB)
- 8.Nov PROBLEM: ultrasound - reproductive
 Hx Consulting theriogenologist Dr. Dennis Schmitt present for transrectal ultrasound exam. After a cleansing enema, elephant was laid on the left side down for ultrasound exam. Exam revealed a single viable fetus measuring 5 cm tall and 8-10 cm long, implanted in the middle of the left uterine horn (about 1 foot cranial to the bifurcation). Pregnancy confirmed! Dr. Schmitt commented that most elephant pregnancies are carried at the bifurcation, however the fact that fetus is developing in the middle of a horn should not be a problem, it only made it more challenging to image. Sex cannot be

MedARKS%20Reports[1]

determined in elephants via ultrasound because the penis and vulva are in the same location. Sex can be determined pre-birth at about 1 year of gestation via measurement of serum testosterone in the dam. Cows carrying male calves have higher testosterone levels than those carrying female calves. Due to location of pregnancy, 4-D ultrasound would only be possible if elephant was trained to lay on her right side. (ZSG)

15.Nov S Mycobacterial culture results from serial trunk washes collected in August 2005.
O No isolation made.

A
P (ZSG)

20.Nov Blood sample:

21.Dec Parasitology examination: (ROUTINE EXAMINATION) Fecal sample.
NO PARASITES SEEN

.....2006...

28.Jun Parasitology examination: (ROUTINE EXAMINATION) Fecal sample.

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 23 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2006...

28.Jun NO PARASITES SEEN

31.Jul PROBLEM: culture - fecal (onset)
hypoproteinemia (onset)
increased chemistry result - AMYLASE (onset)
trunk wash (onset)

Urine sample analysis results:

Blood sample: (EDTA) (8:30.0) Hematology results.

WBC:9.80 *10³/UL; HCT: 40.0%;

Blood sample: (8:30.1)

Blood sample: (8:30.2)

Blood sample: (8:30.3)

Blood sample: (8:30.4)

Blood sample: (8:30.5)

Blood sample: (8:30.6)

Antech Diagnostics

Accession #: INBC02447321

Received: 1 August 2006

Reported: 7 August 2006

Source: feces

Mixed gastrointestinal flora isolated.

NEGATIVE for Salmonella and Shigella.

Possible anaerobe isolated.

National Veterinary Services Laboratory, Ames, Iowa

NVSL ID: 1515851

Case#: 0609479

Mycobacterial culture (trunk wash): No isolation made (CUL)
Serial trunk washes for mycobacterial culture and fecal cultures initiated today and will be completed 2 Aug 05. (VRC)

1.Aug PROBLEM: johne's disease screening (onset)

Antech Diagnostics

Accession #: INBC02450569

Received: 2 August 2006

Reported: 8 August 2006

Source: feces

Mixed gastrointestinal flora isolated.

NEGATIVE for Salmonella and Shigella.

No anaerobes isolated in 5 days.

National Veterinary Services Laboratory, Ames, Iowa

NVSL ID: 1515852

Case#: 0609480

Mycobacterial culture (trunk wash): No isolation made (CUL)

2.Aug PROBLEM: culture - fecal (resolved)

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 24 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)
African elephant
Name: MIKKI

Sex: Female Acc. #: 101038
Age: 22Y 10M Est Birth: 26.Sep.1985

.....2006...

2.Aug trunk wash (resolved)

Antech Diagnostics

Accession #: INBC02453829

Received: 3 August 2006

Reported: 9 August 2006

Source: feces

Mixed gastrointestinal flora isolated.

NEGATIVE for Salmonella and Shigella.

No anaerobes isolated in 4 days.

National Veterinary Services Laboratory, Ames, Iowa

NVSL ID: 1515853

Case#: 0609481

Mycobacterial culture (trunk wash): No isolation made (CUL)

4.Aug PROBLEM: hypoproteinemia (resolved)

increased chemistry result - AMYLASE (resolved)

annual examination

vaccination - rabies

vaccination - Tetanus toxoid

Purpose/Problem: Routine vaccination.

Vaccination: RABIES VACCINE (KILLED) 2ml IM SID

TETANUS TOXOID 1ml IM SID

CBC, chem, and urinalysis results from samples collected 31 Jul 06

MedARKS%20Reports[1]

as part of an annual health evaluation show normal results except for a slightly low total protein (7.1 g/dl, 2 s.d.) with normal albumin and globulin, and a possibly elevated serum amylase (9180 IU/L, 3.9 s.d.). Total protein is likely not clinically significant as albumin and globulins are normal. Review of past amylase results of African elephants at this institution show a previous high in the 8000's. The 9180 IU/L is not likely clinically significant.

Monitor. (RBB)

S Elephant was first photographed in the yard (front, right side, left side), then chained indoors for annual examination. Normal body condition, integument, and trunk. Normal eyes, ears, and temporal glands. Normal respirations. Feet appear healthy. The most cranial/central toenail of each rear foot has a vertical crack -- however these cracks are not infected and appear to be growing out. Urogenital track was not inspected. Upper dental arcades are normal. Brief glimpses of lower molars reveal no abnormalities. Hay particle size in feces is normal. Mammary glands seemed to have gravitated ventrally and look more prominent than before. Vaccinated with tetanus toxoid and rabies in the left hamstring region after prepping skin.

O

A Elephant appears healthy. Review of photos reveals that abdomen

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 25 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2006...

4.Aug appears fuller/more distended at this exam compared to photos prior to pregnancy.

P

Rx: RABIES VACCINE (KILLED) 2 ml IM SID for 1 day. (12500)

Rx: TETANUS TOXOID 1 ml IM SID for 1 day. (277337A) (ZSG)

7.Aug Protein electrophoresis results from blood collected 31 Jul 06 show low alpha 1 (0.2 g/dl) and slightly low alpha 2 (0.5 g/dl). These results are similar to last year. Clinical significance is likely low.

Serum Vitamin E was 1.46 ug/ml. This is the highest measured for this elephant but is in the 2-4 ug/ml range for many mammals.

Currently, elephant receives 3 times a week 60 mls vitamin E TPGS 20% solution PO. Consult with elephant experts regarding this vitamin E result and Vitamin E supplementation. (RBB)

8.Aug Encephalomyocarditis virus (EMC) Virus neutralization (VN) on blood collected 31 Jul 06 was negative (1:32). (RBB)

9.Aug S Leptospirosis serology results from blood collected 31 July 2006. O NEGATIVE titers for L. icterohaemorrhagiae, L. grippityphosa, L. hardjo, L. pomona, and L. canicola.

A

P (RBB)

MedARKS%20Reports[1]

- 10.Aug S Results of three consecutive day fecal culture (31 July, 1-2 August).
 O NEGATIVE for Salmonella sp. and other bacterial pathogens.
 A
 P (ZSG)
- 22.Aug S West Nile virus serology results from blood collected 31 Jul 06.
 O NEGATIVE at 1:40 (serum neutralization).
 A No evidence of exposure to WNV.
 P (RBB)
- 28.Aug PROBLEM: johne's disease screening (resolved)
 Johne's Radiometric Culture Results Form
 Johne's Testing Center
 University of Wisconsin
 School of Veterinary Medicine
 2015 Linden Dr., West Rm 4230
 Madison, WI 53706-1102
 608-265-6463
 Accession #: 54777
 Sample Type: Feces
 Species: Exotics
 Date Received: 8/29/06
 Date Completed: 10/26/06
 Collection: 8/28/06

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 26 -

Medical History Report - Summary for Individual Specimen
 LOUISVILLE ZOOLOGICAL GARDEN

```
=====
LOXODONTA AFRICANA (no subsp)      Sex: Female      Acc. #: 101038
African elephant                  Age: 22Y 10M Est Birth: 26.Sep.1985
Name: MIKKI
=====
```

.....2006....

```
28.Aug Animal ID      RESULT
Giraffe 101078      Negative
Giraffe 101890 (should be 101891)      Negative
Reindeer 102003      Negative
Giraffe 102529      Negative
Guanaco Herd        Negative
Mhorr Gazelle herd Negative
Elephant 100479      Negative
Elephant 101038      Negative
Results Certification: EJ Wagner 10/30/06
Lab Comments: Not in HPC (CUL)
Fecal sample collected and submitted to University of
Wisconsin-Madison for Johne's radiometric culture. (VRC)
```

```
1.Oct weight: 4061 Kg ( 8950 Lb)
11.Oct S Mycobacterial culture results from serial trunk washes collected
in July/August 2006.
O No isolation made.
A
P (ZSG)
```

MedARKS%20Reports[1]

- 1.Nov Results of Johne's radiometric culture of feces collected 28 Aug 06 is negative. (RBB)
14.Nov Parasitology examination: (ROUTINE EXAMINATION) Fecal sample. NO PARASITES SEEN
27.Nov Weight today is 4065 kg. (8942 lbs). Previous weights are 1 Oct 06 4061 kg (8953 lbs) and 31 Mar 05 3629 kg (8000 lbs). Goal was to gain 500 lbs during pregnancy. However the scale used in the Mar 05 weight is different from the latter two weights and the elephant manager believes some weight gain is body growth. Staff agrees this weight gain is acceptable considering her present body condition. (RBB)
weight: 4056 Kg (8939 Lb)

.....2007...

- 24.Jan PROBLEM: blood collection - plasma
1.5 donor bags of blood collected from the medial saphenous vein. (VRC)
29.Jan PROBLEM: blood collection - plasma
Two donor bags of blood collected from the medial saphenous vein. (VRC)
1.Feb PROBLEM: exudate - right tusk sulcus

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 27 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

=====

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

=====

.....2007...

- 1.Feb ANTECH DIAGNOSTICS
- | Accession No. | Doctor | Owner | Pet Name | Received |
|--|--------------|-----------------|---------------------|------------|
| INBC02856555 | BURNS | ELEPHANT | 101038 MIKKI | 02/02/2007 |
| Species | Breed | Sex | Pet Age | Reported |
| Elephant | | F | 02/08/2007 04:06 PM | |
| Test Requested | Results | Reference Range | Units | |
| CULTURE (ANAEROBIC) | | | | |
| Source | Tooth Sulcus | | | |
| Preliminary #1 | 02/06/2007 | | | |
| NO ANAEROBES ISOLATED IN 3 DAYS. | | | | |
| Preliminary #2 | 02/07/2007 | | | |
| POSSIBLE ANAEROBE ISOLATED | | | | |
| Final Report | 02/08/2007 | | | |
| ABUNDANT GROWTH Bacteroides species(not fragilis) Sensitivity testing | | | | |
| is not valid for anaerobes. Drugs of choice: | | | | |
| Amoxicillin/Clavulanic Acid, Chloramphenicol, Clindamycin, Piperacillin, and | | | | |

Metronidazole.
 CULTURE (AEROBIC)
 Source Tooth Sulcus
 Source
 Preliminary #1 02/04/2007
 Organism #1 Escherichia Coli
 ABUNDANT GROWTH
 Preliminary #2 02/05/2007
 ABUNDANT GROWTH OF GRAM POSITIVE ORGANISMS
 Preliminary #3 02/06/2007
 Organism #2 Corynebacterium Species
 ABUNDANT GROWTH
 Organism # 3 Group D Strep (Non-Enterococcus)
 ABUNDANT GROWTH
 Final Report 02/07/2007
 MIC SENSITIVITIES ARE UNAVAILABLE FOR CORYNEBACTERIUM SPECIES
 AND
 GROUP D STREP. (NON-ENTEROCOCCUS) AT THIS TIME. KIRBY BAUER
 SENSITIVITIES ARE RELEASED.
 *** ORGANISM 3 ***

MIC ORGANISM #1	MIC(UG/ML)	TEST RANGE	INTERPRETATION
Organism #1	Escherichia Coli		
Amikacin	<=4	S	
Amoxicillin	4	S	
Ampicillin	4	S	

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 28 -

Medical History Report - Summary for Individual Specimen
 LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2007....

1.Feb	Cephadroxil	16								I
	Cefazolin	<=4								S
	Cefoxitin	<=4								S
	Cefpodoxime(Simplicef)		<=2							S
	Ceftiofur	<=2								I
	Cephalexin	16								I
	Clavamox	4								S
	Difloxacin (Dicural)		<=0.25							S
	Enrofloxacin (Baytril)		<=0.25							S
	Gentamicin	<=2								S
	Marbofloxacin (Zeniquin)		<=0.25							S
	Potentiated Sulfonamide		<=1							S
Suggested Dosing Guidelines based on MIC Results:										
LARGE ANIMAL SENSITIVITY #1 #2 #3 #4 #5										
	Amikacin		S	S						
	Ampicillin		S	S						
	Cefazolin		S	R						

MedARKS%20Reports[1]

Naxcel (ceftiofur)		S	R
Enrofloxacin	S	R	
Erythromycin	R	S	
Gentamicin	S	S	
Oxytetracycline		S	S
Rifampin	S	R	
Ticarcillin	S	R	
TMP/Sulfa	R	R	(CUL)

Hx Staff reports seeing a foamy exudate at the opening of the R tusk sulcus. The R tusk was lost in Oct 2001 after a compression injury in Jun 1993 and periodic observation of purulent exudate. When they explored the area, a cup or so of purulent exudate exited the sulcus.

S A digit can be advanced back into the sulcus and at about 3" in a moist lining could be felt. A polypropylene catheter was advanced 12" into the sulcus.

O Initially, two swabs were placed their full length into the sulcus for culture.

A Return of drainage of tusk sulcus possibly as a result of a persistent bone/tooth fragment.

P Sulcus was flushed with 50:50 Betadine hydrogen peroxide. Very little exudate was recovered. (RBB)

2.Feb Dr. Clark & Elizabeth evaluated Mikki. During flushing a gritty material was recovered. This may be bone sediment. Dr. Clark recommends continuing flushing. It might be good to collect some of the sediment from the flush for microscopic analysis. (RBB)

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 29 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2007...

5.Feb S Consulting theriogenologist Dr. Rich Linhart was present to perform transrectal ultrasound of the cervix. After manually cleaning out the rectum, Dr. Linhart first palpated the cervix ("bratwurst" size structure ventral to the rectum when arm is inserted as deeply as possible), then imaged it via his portable ultrasound (2.4 cm diameter measured transversely, 2.85 cm diameter measured longitudinally). Dr. Linhart expects this structure to "disappear" (become unrecognizable) as the cervix effaces and thins. Dr. Linhart is interested in speaking with Dr. Dennis Schmitt regarding the potential application of other indicators that parturition is near (i.e. drop in body temperature, spike in calcium in the milk).

O

A

P Dr. Linhart will try to come out to the Zoo weekly on Monday afternoons to continue to assist us with imaging Mikki. (ZSG)

6.Feb CYTOLOGY RESULTS

Source: TOOTH SULCUS-GRIT

Number of slides: 8

Type:SMEAR

[4] Hemacolor

[] Gram

[] Acid Fast

[] Other:

Results: Numerous large intermediate squamous epithelial cells. Minimal numbers of inflammatory cells (neutrophils) are present. Large numbers of pleomorphic bacteria. Moderate amorphous, eosinophilic material of unknown origin.

Analysis by:ERH (CYT)

S In-house cytology results on retrieved exudate from right upper tooth sulcus post-flushing.

O

A Cytology reveals epithelial cells, minimal inflammatory cells, and large numbers of bacteria.

P Continue regular flushing and monitor. (ZSG)

11.Feb PROBLEM: blood collection - plasma

One donor bag of blood collected from the medial saphenous vein. (VRC)

12.Feb Culture result from swab of tusk sulcus 1 Feb 07 shows Escherichia coli, Corynebacterium sp., Group D Streptococcus, and Bacteroides sp. Continue current Rx. (RBB)

S Consulting theriogenologist Dr. Rich Linhart was present to perform transrectal ultrasound of the cervix. After manually cleaning out the rectum, Dr. Linhart imaged and measured the cervix

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 30 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)

Sex: Female

Acc. #: 101038

African elephant

Age: 22Y 10M Est

Birth: 26.Sep.1985

Name: MIKKI

.....2007...

12.Feb via his portable ultrasound (2.65 cm diameter measured transversely, 3.05 cm diameter measured longitudinally). Dr. Linhart spoke with Dr. Dennis Schmitt this morning. Per Dr. Schmitt, monitoring for the progesterone drop is the best way to predict calving, however a combination of modalities is probably best. The milk calcium test is effective in elephants however elephants tend not to make milk until the day of calving.

O

A

P Dr. Linhart will image again next week. (ZSG)

15.Feb PROBLEM: blood collection - plasma

Two donor bags of blood collected from the left medial saphenous vein. (VRC)

19.Feb PROBLEM: vaccination - Tetanus toxoid

Purpose/Problem: pregnancy; exudate - right tusk sulcus

Vaccination: TETANUS TOXOID 1ml IM SID (.000 ml/kg)

MedARKS%20Reports[1]

S Like last week, consulting theriogenologist Dr. Rich Linhart was present to image the cervix via transrectal ultrasound. The cervix measured 5.08 cm longitudinally and 5.1 cm transversely. Following ultrasound exam, Mikki was boosted with tetanus toxoid vaccine in the right hamstring region following scrubbing the skin with povidone iodine.

O
A Cervix appears to be slowly dilating. Tetanus toxoid booster was given to maximize maternal titer as parturition gets closer.

P Continue to monitor daily serum progesterone. Dr. Linhart will be back in 2 weeks to image the cervix again.

Rx: TETANUS TOXOID 1 ml IM SID for one day. (1630101A) (ZSG)

22.Feb PROBLEM: blood collection - plasma

One donor bag of blood collected from the right medial saphenous vein. (VRC)

25.Feb PROBLEM: blood collection - plasma

Two donor bags of blood collected from the left medial saphenous vein. EMLA cream was applied 20 minutes prior to venipuncture and there appeared to be less pain. (VRC)

4.Mar PROBLEM: blood collection - plasma

Two 450ml donor bags of blood collected from the left medial saphenous vein. (VRC)

6.Mar Ultrasound & palpation via Dr. Linhart shows cervix is at least 15 cm diam and is about the size of a butternut squash. (RBB)

11.Mar PROBLEM: enlargement/hypertrophy - mammary gland

Staff reported normal mammae in the AM but in the PM, Mikki's mammae had enlarged and Mikki could be expressed. Mammae development can

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 31 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)
African elephant
Name: MIKKI

Sex: Female
Age: 22Y 10M Est

Acc. #: 101038
Birth: 26.Sep.1985

.....2007...

11.Mar occur weeks to days pre-parturition. Mikki is right on schedule.

11.Mar (RBB)

12.Mar PROBLEM: blood collection - plasma

AM Staff reports Mikki urinated 3-4 times in a row and laid on each side and wallowed a bit on each side this AM (approx. 7:30 AM). She also has occasionally kicked the rear leg forward and front leg backward. The rest of the day she was normal.

Visual exam shows no discharges. Mammae development as described yesterday (cleavage present). Unable to express milk via gentle manipulation of the nipple (unlike reported yesterday).

This behavior is likely associated with late term discomfort. Plan to palpate and ultrasound cervix this PM (pending Dr. Bennet's availability) and await progesterone results due this PM for Friday & Saturday (9-10 Mar).

PM Ultrasound of the mammae using a 5.0 probe to image lacteals.

MedARKS%20Reports[1]

Indianapolis Zoo used changes in the lacteals as another predictor. Imaging shows longitudinal blood vessel like areas near the nibble of about 0.2 - 0.5 cm in diameter.

Transabdominal ultrasound using a 3.5 probe shows fetal movement.

P4 from Fri & Sat (Mar 9 & 10) show no drop.

Dr. Scott Bennett ultrasounded and palpated the cervix. Per ultrasound, cervix is about 8 cm diam and is closed. Via palpation, cervix is as it was on 6 Mar 07 (butternut squash sized). Dr. Bennett thought she is a good 10 days pre-parturition. (RBB) One 450ml donor bag of blood collected from the right medial saphenous vein. (VRC)

15.Mar Possible drop in P4 and evaluation by Dr. Linhart

Dr Linhart: Rectal palpation of cervix indicates it is unchanged since his last visit (6 Mar 07). It is still about the size of a butternut squash. Ultrasound imaging via the transesophageal probe shows the cervix has a round cross section posteriorly and becomes triangular anteriorly.

PM

P4 results from blood collected yesterday show a P4 of 0.09 ng/ml. This is below the 0.1 baseline described in the literature (although the lab considers baseline to be 0.05). The lab reports the control curve for this run looked good and that the other elephant samples in the run had appropriate results for their phase in the cycle. The lab will run the assay again to confirm. Second run showed p4 of .27 pg/ml, not yet baseline.

Telephone conversation with Dr. Schmitt: Plan to send him serum from Mar 13, 14, 15 for arrival tomorrow AM. He will run a P4 assay to confirm the drop of 14 Mar 07 and determine if P4 is low 15 Mar 07. If P4 stays low 2 days in a row, he will make plans to travel

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 32 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2007...

15.Mar to Louisville. If P4 has dropped, he recommends twice a day palpation of the cervix. Cervix changes typically occur about 12 hrs prelabor. (RBB)

16.Mar Per Dr. Schmitt's lab, p4 on samples collected 13, 14, 15 Mar 07 are declining but are not yet at baseline. Blood sample collected at 8 AM sent overnight Saturday hold for pickup to Dr. Schmitt's for P4 analysis. (RBB)

17.Mar Early AM blood collection and counter-counter shipment of this AM's sample to Dr. Schmitt's lab. Per his lab's results of P4 in samples collected 16 & 17 Mar continue to decline but are not yet at baseline. Even though P4 is not yet at baseline, Elephant Area Supervisor says it is time for Dr. Schmitt to come to Louisville ASAP. Dr. Schmitt made reservations to arrive tomorrow PM. Dr. Schmitt requested photos of the ultrasound be e-mailed. Photos

showing the amniotic fluid and cervix from the 13:00 ultrasound were sent.

13:00 Rectal palpation & ultrasound by Dr. Scott Bennett shows cervix is softening and has an opening of about 3 cm. Cervix is further caudal than last time Dr. Bennett examined Mikki.

20:00 Rectal palpation & ultrasound by Dr. Scott Bennett shows presence of amniotic fluid is easily imaged per rectum. Use of the trans-esophageal probe shows presence of the mucus plug, presence of fetal membranes and parts of the fetus in the amniotic sac.

Telephone conversation with Heidi Riddle: In their experience, dams can rapidly progress from no cervical dilation to being in full labor in an hour or so. A fully dilated cervix imaged by ultrasound shows the full field being amniotic fluid in the birth canal. (RBB)

18.Mar PROBLEM: pregnancy (resolved)
parturition

Urine sample analysis results: (23:55.0)

00:45 Staff reports Mikki was lying down then jumped up and passed the mucus plug and broke water. A large volume of amniotic fluid was passed and Mikki explored it and her vulva with a flemen response. Amniotic fluid had some blood in it. Staff retrieved the mucus plug. Parturition teams called into Zoo to be on standby for birth.

For the remainder of the night, Mikki had mild abdominal contractions, would occasionally shift weight between rear legs, swished her tail, lift her tail as if to defecate, and explore her caudal abdomen and vulva with her trunk.

07:00 Staff notes profile of caudal abdomen changing from boxy to the more normal curve upward, suggesting tha the calf is moving upward toward the birth canal.

07:34 Milk can be easily expressed from udders. Staff notes milk

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 33 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2007...

18.Mar draining from left teat as indicated by a wet spot on the medial aspect of the L leg.

07:48 More frequent patting of vestibule by tail. More frequent wider stance of rear legs.

09:30 Rectal palpation & ultrasound by Zoo veterinary staff. Anterior opening to cervix measures 11 cm x 5 cm. Rectal palpation reveals a firm upward curve just anterior to the cervix that likely represents the calf approaching the birth canal. The cervix is much more caudal in the pelvis and is difficult to characterize due to its flaccidity. Rose colored fluid is dripping from the vulva. The mucocutaneous border of the vulva is becoming edematous and everted. There are greasy/waxy colostrum drops at the nipples.

17:08 Rectal palpation and ultrasound by Dr. Dennis Schmitt shows

the rear feet are in position near the entry of the birth canal. His conclusion is that Mikki is ready to give birth and will likely start labor in the quiet of this evening.

19:00 Staff begins to notice fetal bulge intermittently being present then retreating.

20:00 Teams in place for parturition. Fetal bulge persistently present and Mikki actively pushing via abdominal contractions and shifting weight between rear legs.

Placenta passed 1 1/2 hrs after birth. Placenta was examined and appears to be intact. Placenta weighted 61.5 lbs (without umbilicus). Photos taken. Sections of placentation taken for histopathology.

Conversation with Dr. Dennis Schmitt: Expect dam to have vaginal bleeding post birth for a few weeks. (RBB)

Biopsy report: 2007-B9

22.Mar PROBLEM: edema - vulva (onset)

Staff reports swelling at the vulva. The swelling seems to irritate Mikki as she rocks side to side, slapping the edema on the inside of her legs.

Visual exam shows an approx 12" long area of fluid accumulation in a central lip of the vulva. The skin of the swelling is red and it appears slightly translucent. Photos taken and e-mailed to Dr. Schmitt. He replied:

Roy and Zoli,

I talked with Dave Campbell just as I was opening up this email, so the pictures were very helpful. As postpartum edema in elephants go, this one is actually not that bad. I recommend cold water hydrotherapy 3-4 times a day for 20-30 minutes and then putting a ointment with some lanolin in it to keep the area soft. As they dry out them become more irritating to the cow. This should resolve in the next 7-10 days. Also she will pass lochia for the next few

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 34 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2007...

22.Mar weeks as the uterus involutes.

Thanks for the update.

Dennis (RBB)

23.Mar Purpose/Problem: edema - vulva

Rx: CORONA UDDER BUTTER topically as needed for 21 days.

Topical treatment: Apply to edematous & irritated areas of vulva Originally prescribed until further notice.

Discontinued on 12.Apr.2007

Rx: CORONA UDDER BUTTER topically as needed until further notice. (RBB)

Hx Elephant staff is giving Mikki's vulvar region cold water hydrotherapy a few times a day as recommended by Dr. Schmitt. Per

MedARKS%20Reports[1]

- elephant supervisor Dave, elephant is not as uncomfortable today as last night. Staff veterinarian Dr. Burns will be obtaining a lanolin-based topical product today to use as needed. Visually today, vulvar region does not appear as edematous and no pink mucous membranes are exposed/everted. Elephant still blows air and throws hay at vulvar region occasionally. (ZSG)
- 26.Mar Staff reports the vulva area seems to be much less irritating to mikki as she is no longer wacking the area against her legs. (RBB)
- 27.Mar PROBLEM: blood collection
 increased ALT/SGPT (onset)
 increased chemistry result - AMYLASE
 increased AST (onset)
 increased chemistry result - CPK (onset)
 increased chemistry result - LIPASE
 increased chemistry result - phosphorous (onset)
 Blood sample: (EDTA) (8:25.0) Hematology results.
 WBC:12.20 *10³/UL; HCT: 39.0%;
 Blood sample: (8:25.1) Chemistry results.
 BUN:8 MG/DL;
 Blood sample: (8:25.2)
- 28.Mar CBC from blood collected yesterday is normal. (RBB)
- 29.Mar Elephant staff reports that vulva area has improved 70-80%. They are happy with the progress and are treated the area with cold water and "udder butter" twice daily. (VRC)
- 30.Mar Hx The hyperemic fluid filled sac protruding from the vulva that bothered Mikki so much and was photographed on 22 March had ruptured several days ago and the deflated thin tissue lining turned white since then. Visual exam today reveals necrosis of some of this epithelium at the entrance of the urogenital tract. Area is dirty from elephant blowing sand on it. Elephant staff will keep area clean via hosing and monitor for issues with flies. (ZSG)
- 2.Apr Chem from blood collected 27 Mar 07 shows elevated AST (207 IU/L, 18

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 35 -

Medical History Report - Summary for Individual Specimen
 LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2007....

- 2.Apr s.d.), ALT (33 IU/L, 4.3 s.d.), phosphorus (6.6 mg/dl, 2 s.d.), amylase (11,730 IU/L 5.5 s.d.), lipase (30 IU/L, 3.2 s.d.), CPK (19,100 IU/L, 96 s.d.). These abnormalities may be associated with birthing and the vulva edema or from muscle origin due to Mikki being held inside for bonding with the calf. These should resolve shortly as Mikki and calf are having supervised time in the yard. (RBB)
- 4.Apr Hx Elephant area report that Mikki sloughed the rotten tissue that was present at her urogenital opening. Material is thick tissue, malodorous and necrotic. Area supervisor Dave says that what is left appears healthy. There is a small area of bleeding. Elephant

MedARKS%20Reports[1]

- 5.Apr has been acting much more comfortable. Recheck soon. (ZSG)
 PROBLEM: increased ALT/SGPT (resolved)
 increased AST (resolved)
 Blood sample: (EDTA) (10:00.0) Hematology results.
 WBC:11.70 *10³/UL; HCT: 37.0%;
 Blood sample: (10:00.1) Chemistry results.
 BUN:5 MG/DL;
 Blood sample: (10:00.2)
- 6.Apr CBC from blood collected yesterday show normal results. (RBB)
- 10.Apr Chem from blood collected 5 Apr 07 shows low albumin (2.7 g/dl, 2
 s.d.), increased phosphorus (6.6 mg/dl, 2 s.d.), and increased CPK
 (1021 IU/L, 3.9 s.d.).
 Compared to 27 Mar 07 sample, AST and ALT have normalized and
 phosphorus and CPK are nearing normal. (RBB)
- 11.Apr PROBLEM: increased chemistry result - CPK (resolved)
 increased chemistry result - phosphorous (resolved)
 anorexia
 colic
 hyperfibrinogenemia (onset)
 Blood sample: (EDTA) (10:10.0) Hematology results.
 WBC:11.30 *10³/UL; HCT: 36.0%;
 Blood sample: (Citrate) (10:10.1) Hematology/Chemistry/Serology result
 WBC:9.80 *10³/UL; HCT: 40.0%; BUN:7 MG/DL;
 Blood sample: (10:10.2)
 S Area supervisor Dave reports that elephant is refusing food this
 morning, acts a bit bloated and depressed. Visual exam reveals
 elephant intermittently rubs tusk/mouth on floor and acts painful or
 agitated. Several soft fecal balls were passed during observation.
 Examination of vulvar region reveals a superficial patch of
 devitalized tissue in the spot where the edema/necrotic tissue
 previously was (sloughed 4 April). Dave says elephant continues to
 periodically have vulvar discharge and there is sometimes blood clots
 in her urine. Asked elephant staff to collect blood. Post blood

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 36 -

Medical History Report - Summary for Individual Specimen
 LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2007....

- 11.Apr collection, elephant refused treat bananas.
 CBC reveals a normal leukocyte count. Band neutrophils are within
 ISIS reference ranges but are elevated for Mikki.
 Chemistries/fibrinogen are pending.
 Brief phone conversation with Dr. Dennis Schmitt to discuss
 situation and treatment of colic in elephants. He has seen cows
 exhibit colic signs post-partum, presumably due to uterine cramping
 associated with involution. He recommends treating with flunixin
 meglumine daily as needed (about 40 ml dose). Dr. Schmitt
 recommends the oral or intramuscular route as the intravenous route

can cause ear sloughing.
 Conversation later in the day with Dave -- Elephant continued to show signs of discomfort in the morning and midday. Mikki was walked and eventually passed a lot of gas. Soon after that, elephant became interested in food and began to eat again. Visual observation of cow in yard shows elephant actively eating hay.

O
 A Suspect transient colic, possibly due to reproductive or more likely, gastrointestinal pain.
 P Monitor. Hold off on NSAID treatment. Recheck tomorrow. (ZSG)
 12.Apr Staff reports mikki is behaving normally (RBB)
 S Blood results from sample collected 11 April 2007.
 O
 A Chemistries reveal elevated fibrinogen (inflammation?). Phosphorus and CPK have normalized.
 P Monitor. (ZSG)

2.May PROBLEM: edema - vulva (resolved)
 29.May Blood sample: (8:30.0)

1.Jun PROBLEM: hyperfibrinogenemia (resolved)
 Paternity testing results for this dam's calf born 18 Mar 07:
 3701 South 10th Street Omaha, Nebraska 68107-2200 (402)
 738-6904
 June 1, 2007
 Paternity Assessment for African Elephant Calf Born at Louisville Zoo
 Presented was the scenario: African elephant cow (SB238) calved in mid-March 2007, after having being artificially inseminated with semen from three candidate African elephant bulls (Artie, SB403; Jackson, SB368, and MacLean, SB359).
 All five samples were screened with six African elephant specific microsatellite loci. Accepting SB238 as the true and biological dam, the required allele was not received by the bull calf from either

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 37 -

Medical History Report - Summary for Individual Specimen
 LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2007....

1.Jun Artie SB403 or MacLean SB359 at two loci each, resulting in mismatched genotypes from these two candidates. There were no genotypic mismatches among the calf, the known dam and Jackson SB368.
 Therefore, assuming no other candidate sires exist, the paternity is accepted as Jackson SB368 for the 2007-born bull calf of dam SB238 by the genetic exclusion of the other two candidate sires.
 Rick Brenneman, PhD

Center for Conservation and Genetics

Omaha's Henry Doorly Zoo

3701 South 10th Street

Omaha, NE 68107

rabr@omahazoo.com

402-738-6904

Fibrinogen results from blood collected 29 May 07 show its levels have normalized. (RBB)

11.Jun Blood sample:

14.Jun S Recheck fibrinogen results from sample collected 11 June 2007.

O 345 mg/dl

A Level is normal.

P No further rechecks. (ZSG)

2.Jul Parasitology examination: (ROUTINE EXAMINATION) Fecal sample.
NO PARASITES SEEN

25.Sep Johne's Radiometric Culture Results Form

Johne's Testing Center

University of Wisconsin

School of Veterinary Medicine

2015 Linden Dr., West Rm 4230

Madison, WI 53706-1102

Accession #: 58661

Sample Type: Feces

Species: Exotics

Date Received: 26 September 2007

Date Completed: 20 November 2007

Collection: 25 September 2007

Animal ID

RESULT

Goat Herd

Negative (all 8 separate

composite samples)

Camels 102740, 102741 Negative

Rhino 100905, 100906 Negative

Elephant 101038

Negative

Camels 101158, 101159 Negative

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 38 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)

Sex: Female

Acc. #: 101038

African elephant

Age: 22Y 10M Est

Birth: 26.Sep.1985

Name: MIKKI

.....2007...

25.Sep Elephant 102767

Negative

Elephant 100479

Negative

Reindeer 102003

Negative

Bongo 102738

Negative

Addax 102706

Negative

Bongo 102746

Negative

Bongo 101780

Negative

MedARKS%20Reports[1]

Giraffe 102836 Negative
 Bongo 101426 Negative
 Results Certification: CL 19 November 2007 (CUL)
 Johne's screening: individual fecal sample submitted to the Johne's Center at the University of Wisconsin - Madison. (VRC)

12.Oct PROBLEM: colic (onset)

ANTECH DIAGNOSTICS

Accession No.	Doctor	Owner	Pet Name	Received
CHBC19153149	BURNS	ELEPHANT	ID 101038	10/13/2007

Species	Breed	Sex	Pet Age	Reported
Other			10/20/2007 10:54 AM	

Test Requested	Results	Reference Range	Units
CAMPYLOBACTER			

Final Report 10/18/2007
 NEGATIVE FOR CAMPYLOBACTER IN 72 HOURS.
 CULTURE (ANAEROBIC)

Preliminary #1 10/18/2007
 NO ANAEROBES ISOLATED IN 3 DAYS.

Preliminary #2 10/19/2007
 NO ANAEROBES ISOLATED IN 4 DAYS.

Final Report 10/20/2007
 NO ANAEROBES ISOLATED IN 5 DAYS.

CULTURE (FECES)

Source Unknown

Preliminary #1 10/16/2007
 Mixed gastrointestinal flora isolated.

Preliminary #2 10/17/2007
 Mixed gastrointestinal flora isolated.

Final Report 10/18/2007
 Mixed gastrointestinal flora isolated.

NEGATIVE FOR SALMONELLA AND SHIGELLA

ANTECH DIAGNOSTICS

Accession No.	Doctor	Owner	Pet Name	Received
CHBC19153111	GYIMESI	ELEPHANT	ID 101038	10/13/2007

Species	Breed	Sex	Pet Age	Reported
Other			10/20/2007 10:54 AM	

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 39 -

Medical History Report - Summary for Individual Specimen
 LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2007....

12.Oct	Test Requested	Results	Reference Range	Units
	CAMPYLOBACTER			

Final Report 10/18/2007
 NEGATIVE FOR CAMPYLOBACTER IN 72 HOURS.
 CULTURE (ANAEROBIC)

Preliminary #1 10/18/2007

MedARKS%20Reports[1]

NO ANAEROBES ISOLATED IN 3 DAYS.

Preliminary #2 10/19/2007

NO ANAEROBES ISOLATED IN 4 DAYS.

Final Report 10/20/2007

NO ANAEROBES ISOLATED IN 5 DAYS.

CULTURE (FECES)

Source Unknown

Preliminary #1 10/16/2007

Mixed gastrointestinal flora isolated.

Preliminary #2 10/17/2007

Mixed gastrointestinal flora isolated.

Final Report 10/18/2007

Mixed gastrointestinal flora isolated.

NEGATIVE FOR SALMONELLA AND SHIGELLA (CUL)

HX Staff notes colicky signs and anorexia in this elephant. Last night, (from reviewing video tape recorded as calf-dam monitoring tool), Mikki did not sleep as well as usual. This may have been due to a greater amount of activity the calf had toward and around Mikki, also noted on the tape. There was a more than normal amount of hay left in the stall this AM from last night. However, it was uncertain how much was offered as Punch also had a lot of hay in her stall this AM.

This AM, Mikki refused her grain diet and only ate a portion of her produce diet. This is very unusual as Mikki usually eats well. Mikki refused water at the AM feeding. While in the yard during the day, staff observed Mikki nibbling at hay. They also saw her at drinking water sources but could not determine if she actually drank. When brought inside for the PM, Mikki did not eat any of her grain diet or produce diet. She was even not interested in a banana (a favorite) or water.

Beginning around 14:30, Mikki began lying down more than normal and during unusual times (e.g. during a tour).

Visual inspection at about 17:00 shows Mikki has a slight bloat profile in the upper right paralumbar fossa area. Mikki began to defecate standing and produced a couple of shovel fulls of feces. She then laid down sternally but shifted her weight so she sat half way on her right rear leg & hip. In that position she passed gas and more feces. The feces passed during this observation had a sour

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 40 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2007...

12.Oct mash smell and was wetter than normal. The feces was not formed in fecal balls but was in piles with a watery component that could be squeezed out of the feces. The length of the hay in the feces is shorter than normal but staff said that has been the case due to the dry hay they have been receiving since 10 Oct 07.

MedARKS%20Reports[1]

Also since 10 Oct 07, they have noted an unidentified weed in the timothy hay. A sample of the weed was collected. Staff reports that Mikki often likes hay with unidentified weeds and notes that from the video tape last night when offered a bale with the unidentified weed, she ate that bale faster than normal. Per staff, this presentation is much like when Mikki was a bit colicky and self resolved back in April. (RBB)

13.Oct Hx Area supervisor Dave says that elephant passed more feces (similar to yesterday - wet, malodorous, fecal boluses) at 4:00 AM, and again later this morning. Two different fecals were sampled for Salmonella culture. Elephant drank this AM, ate some bamboo, banana, and other fruits and vegetables. Elephant still not eating full grain and hay ration as would be expected. Subjectively per Dave, slight bloat is resolved and elephant does not act as depressed as yesterday. Still shows some occasional colic signs (stretching, head pressing, preferred to spend a lot of time today in yard with front feet in a deep hole and rear end elevated) but behavior and food intake is slowly normalizing. Dave plans to offer some bran and browse today along with routine husbandry. Staff veterinarian Roy reports that after consulting with several large animal veterinarians at the Mid-America Meeting regarding the weed that is being seen in the hay recently, the sample could not be identified, but the consensus was that it would be an unlikely cause of colic or GI upset. Monitor and recheck tomorrow. (ZSG)

15.Oct PROBLEM: colic (resolved)
Hx Per area supervisor Dave, Mikki has steadily improved over the past few days. Colic signs have resolved and food intake has normalized. Today, areas of the head (caudal to eyes) seem slightly more sunken than normal and elephant staff thinks this is consistent with dehydration. Fresh water is available to elephant and Mikki is eating well. Resolve colic as a problem. Elephant area will monitor. (ZSG)

11.Nov PROBLEM: blood collection
Blood sample: (EDTA) (9:00.0) Hematology results.
WBC:10.20 *10³/UL; HCT: 38.0%;
Blood sample: (9:00.1)
Blood sample: (9:00.2) Chemistry results.
BUN:5 MG/DL;

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 41 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2007...

11.Nov Blood sample: (9:00.3)
S Blood collected by elephant area staff for annual CBC,
chemistries, and fibrinogen.
O

A
P (VRC)
12.Nov PROBLEM: annual examination
PHOTOGRAPH
trunk wash (onset)
Urine sample analysis results: (9:00.0)
ANTECH DIAGNOSTICS
Accession No. Doctor Owner Pet Name Received
CHBC19853503 BURNS ELEPHANT NOT STATED 11/12/2007
Species Breed Sex Pet Age Reported
Elephant 11/20/2007 02:46 PM
Test Requested Results Reference Range Units
CAMPYLOBACTER
Final Report 11/17/2007
NEGATIVE FOR CAMPYLOBACTER IN 72 HOURS.
CULTURE (ANAEROBIC)
Preliminary #1 11/17/2007
NO ANAEROBES ISOLATED IN 3 DAYS.
Preliminary #2 11/18/2007
NO ANAEROBES ISOLATED IN 4 DAYS.
Final Report 11/20/2007
NO ANAEROBES ISOLATED IN 6 DAYS.
CULTURE (FECES)
Source Feces
Preliminary #1 11/15/2007
Mixed gastrointestinal flora isolated.
Preliminary #2 11/16/2007
Mixed gastrointestinal flora isolated.
Final Report 11/17/2007
Mixed gastrointestinal flora isolated.
NEGATIVE FOR SALMONELLA AND SHIGELLA
SENSITIVITIES NOT INDICATED
National Veterinary Services Laboratory, Ames, Iowa
NVSL ID: 1796750
Case#: 081474
Mycobacterial culture (trunk wash): No isolation made (CUL)
Annual exam and preventative health procedures.
S Overall physical exam from trunk to tail shows a normal elephant.
Digital inspection of the sulcus where the R tusk came out years ago
shows the cavity closes to a very small opening. Staff reports no

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 42 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2007...
12.Nov discharge in the last few months. There is a white scar where the vulva edema broke open post partum. There are rings on the nails that likely correspond to when the floor padding was added. The

MedARKS%20Reports[1]

cracks on the rear center nails are growing out and are less than an inch long. Photos taken.

O Blood was collected yesterday. Urine collected via free catch. Temperature of a freshly defecated fecal pile is 98F. Auscultation of the chest is quiet. Auscultation of the abdomen reveals an occasional gurgling GI sound. Swab of the center of a fecal ball collected for culture.

A R tusk sulcus is in good condition. Nail and foot health is good as a result of foot care and floor padding. Elephant is in good general health.

P Photos postponed due to rainy weather. Take fecal cultures and trunk washes today and for the next 3 days. (RBB)

Annual trunk washes obtained 12 - 14 Nov 07. Samples frozen until shipment. (VRC)

13.Nov

ANTECH DIAGNOSTICS

Accession No.	Doctor	Owner	Pet Name	Received
CHBC19900210	BURNS	ELEPHANT	101038	11/14/2007
Species	Breed	Sex	Pet Age Reported	
Other			11/19/2007 01:47 PM	
Test Requested		Results	Reference Range	Units

CAMPYLOBACTER

Final Report 11/17/2007

NEGATIVE FOR CAMPYLOBACTER IN 72 HOURS.

CULTURE (ANAEROBIC)

Preliminary #1 11/17/2007

NO ANAEROBES ISOLATED IN 3 DAYS.

Preliminary #2 11/18/2007

POSSIBLE ANAEROBES ISOLATED.

Final Report 11/19/2007

Organism #1

Bacteroides species(not fragilis) Sensitivity testing is not

valid

for anaerobes. Drugs of choice: Amoxicillin/Clavulanic Acid, Chloramphenicol, Clindamycin, Piperacillin, and Metronidazole.

2 COLONIES

CULTURE (FECES)

Source Unk

Preliminary #1 11/15/2007

Mixed gastrointestinal flora isolated.

Preliminary #2 11/16/2007

Mixed gastrointestinal flora isolated.

Final Report 11/17/2007

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 43 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2007...

13.Nov Mixed gastrointestinal flora isolated.

MedARKS%20Reports[1]

NEGATIVE FOR SALMONELLA AND SHIGELLA
SENSITIVITIES NOT INDICATED

National Veterinary Services Laboratory, Ames, Iowa
NVSL ID: 1796751

Case#: 081475

14.Nov Mycobacterial culture (trunk wash): No isolation made (CUL)
PROBLEM: trunk wash (resolved)

ANTECH DIAGNOSTICS

Accession No.	Doctor	Owner	Pet Name	Received
INBC03751208	BURNS	ELEPHANT		101038 11/15/2007
Species	Breed	Sex	Pet Age	Reported
Elephant				11/21/2007 03:05 PM

Test Requested Results Reference Range Units

CAMPYLOBACTER

Campylobacter Only 11/19/2007
NEGATIVE FOR CAMPYLOBACTER IN 72 HOURS.

CULTURE (ANAEROBIC)

Preliminary #1 11/20/2007

NO ANAEROBES ISOLATED IN 4 DAYS.

Final Report 11/21/2007

Organism #1

Bacteroides species(not fragilis) sensitivity testing is not

valid

for anaerobes. Drugs of choice: Amoxicillin/Clavulanic Acid, Chloramphenicol, Clindamycin, Piperacillin, and Metronidazole.

FEW COLONIES

CULTURE (FECES)

Source Feces

Preliminary #1 11/17/2007

Mixed gastrointestinal flora isolated.

Preliminary #2 11/18/2007

Mixed gastrointestinal flora isolated.

Final Report 11/19/2007

NEGATIVE FOR SALMONELLA AND SHIGELLA

National Veterinary Services Laboratory, Ames, Iowa

NVSL ID: 1796752

Case#: 081476

15.Nov Mycobacterial culture (trunk wash): No isolation made (CUL)
S Blood and urine results from samples collected 11-12 November 2007.

O

A CBC is normal. Chemistries are normal except for elevated amylase (this test has poor specificity, unclear clinical significance). Urinalysis reveals alkaline, concentrated urine, and

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 44 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

MedARKS%20Reports[1]

.....2007...

- 15.Nov abundant calcium oxalate crystals in the sediment.
P Await remaining test results. (ZSG)
- 25.Nov Blood sample:
- 26.Nov Results of Johne's radiometric culture of feces collected 25
September 2007 is NEGATIVE. (ZSG)
- 30.Nov PROBLEM: PHOTOGRAPH
Photos taken as part of annual evaluation. (RBB)
- 10.Dec EMC serology on blood collected 11 Nov 07 is negative (1:32).

NVSL ID	SAMPLE ID	ANIMAL ID	ELEPH SERUM VN for EMC
1796895	1	100479	Negative 1:32
1796896	2	101038	Negative 1:32
1796897	3	102767	Negative 1:32 (RBB)

.....2008...

- 4.Feb S Mycobacterial culture results from serial trunk washes collected
12, 13, and 14 November 2007.
O No isolation made.
A
P Retest annually. (ZSG)
- 22.Feb S Serum vitamin E results from blood collected 25 November 2007.
O 1.06 mcg/ml
A Value is interpreted as okay. Acceptable vitamin E levels in
elephants are considered to be 0.5 - 1.5 mcg/ml.
P Continue with current dose of vitamin E supplementation. Recheck
level yearly. (ZSG)
- 16.Mar PROBLEM: colic (onset)
CYTOLOGY RESULTS
Source: Feces
Number of slides: 1
Type:
 Hemacolor
 Gram
 Acid Fast
 Other:
Results: Moderate mixed bacteria and debris
Analysis by: VRC (CYT)
Staff reports signs of colic this AM. Yesterday was a public
celebration of Her calf's birthday and a lot of produce was added to
the diet.
AM The elephant is lying down and getting up frequently. She has
diarrhea with a sour mash smell. On exhibit, she stands quietly and

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 45 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)	Sex: Female	Acc. #: 101038
African elephant	Age: 22Y 10M Est	Birth: 26.Sep.1985
Name: MIKKI		

.....2008...

- 16.Mar allows the calf to nurse but stands with a hind leg raised and resting on an object and raises her head slightly, a posture suggestive of GI discomfort. There is a bulge high on the right caudal abdomen. Staff has noted passing of gas. Elephant did eat a bit of bamboo during the day.
Fecal collected for cytology.
PM At the end of the day, staff reports elephant is much improved. Late in the day she passed a lot of gas. (RBB)
- 17.Mar PROBLEM: colic (resolved)
Staff reports elephant is back to normal. (RBB)

14.Apr Summary of 2005 & 2006 MAIPA and RT results:
The rapid test (RT)(Elephant TB STAT-PAK) and MAPIA (multi-antigen print immunoassay) are two tests that detect antibodies for M. tb complex organisms in the blood. The Elephant TB STAT-PAK will be used by USDA Ames IA along side of culture on future trunk washes. Initial studies show suggest that early M. tb infection can result in a positive RT or MAPIA test months to years prior to positive trunk culture results due to periodic shedding of bacteria.

Louisville Zoo Elephant historical Results

Year	Elephant	MAPIA	RT
2005	Punch	Neg	Moderate (++) (photo taken)
2006	Punch	Neg	Moderate (++) (photo taken)
2005	Mikki	Neg	Neg
2006	Mikki	Neg	Neg

From: Konstantin Lyashchenko
Sent: Wednesday, April 09, 2008 12:10 PM
To: Miller, Michele; Burns, Roy DVM
Subject: RE: 2006 Louisville Zoo MAPIA results.

Hi Roy and Michele,
According to our records, the MAPIA results for 2005 and 2006 samples were all negative. I could not find any MAPIA images for these two elephants; in most cases, we keep only positive results. The RT reactions for Punch were of moderate intensity (++) , as you could see on the picture, and there was no difference between 2005 and 2006.

Thanks,
Konstantin
From: Miller, Michele
Sent: Wednesday, April 09, 2008 11:27 AM
To: Burns, Roy DVM
Cc: Konstantin Lyashchenko
Subject: RE: 2006 Louisville Zoo MAPIA results.
Hi Roy,

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 46 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)
African elephant
Name: MIKKI

Sex: Female
Age: 22Y 10M Est
Acc. #: 101038
Birth: 26.Sep.1985

.....2008...

14.Apr I didn't get a copy of the MAPIA results but you may be able to get those from Konstantin.
Thanks,
Michele
From: Burns, Roy DVM
Sent: Wednesday, March 12, 2008 1:34 PM
To: Miller, Michele
Subject: 2006 Louisville Zoo MAPIA results.
Michelle: Thanks much. Could I get MAPIA results for 2006 samples?
Thanks
Roy
From: Miller, Michele
Sent: Friday, February 08, 2008 4:55 PM
To: Burns, Roy DVM; Miller, Michele
Cc: Gyimesi, Zoli
Subject: RE: Past Louisville Zoo RT and or MAPIA results.
Hi Roy,
I don't seem to have pictures from the original 2005 samples but there are included in the 2006 jpg. Hopefully you should be able to see all these results together.
Sept 2005 - comment from K. Lyashchenko: Note that 1 of 2 elephants from the other zoo, #100479, looks RT positive but MAPIA negative. Let me know if this will suffice or you would like more info.
So, I would interpret the RT as "positive" for Punch in both 2005 and 2006. I don't usually assign the "plus" numbers since I don't have a good sense of 1-4 but Konstantin does so you can use his interpretation. I'm not sure what NVSL is going to report as results.
Michele
From: Burns, Roy DVM
Sent: Wednesday, January 30, 2008 7:00 AM
To: Miller, Michele
Cc: Gyimesi, Zoli
Subject: Past Louisville Zoo RT and or MAPIA results.
Michelle: In preparing a response to the Jan 17 2008 letter from NVSL asking how many elephants we anticipate testing annually by the ElephantTB STAT-Pak, I reviewed our elephants records and found no mention of the past samples we ran in 2006 and 2005. If possible, could I get the results sent again? I'm sure we received them but it may have been by emails or telephone message and I lost them or misplaced them. Also, if these tests do not give a numeric result, I could use some help in what words to use to describe the results. This is a gap in our records I'd like to fill. This is not time sensitive.

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 47 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)
African elephant

Sex: Female
Age: 22Y 10M Est

Acc. #: 101038
Birth: 26.Sep.1985

Name: MIKKI

.....2008...

14.Apr Thanks for all you do for the elephants

Roy

Our elephants are:

Punch 100479 SB#152

Mikki 101038 SB#238

From: Miller, Michele

Sent: Friday, August 11, 2006 8:09 AM

To: rburns@louky.org; Hayden, Elizabeth

Subject: Elephant tests

Hi Elizabeth and Roy,

I wanted to forward the preliminary results to you. Please see the attachments. I've also sent a new form that helps gather some additional history that will help us interpret some of these tests. To give you an update, the company that manufactures these tests has accumulated enough data that they will probably stop testing elephants as of August 2006 until they can get approval through USDA for licensing of the test for elephants. We will be having a meeting of the National TB Working Group for Zoos to discuss the test and potential implications on the Guidelines in September. I will forward the MAPIA tests as soon as they are available. Let me know if you have any questions but at this point, there is no need to make any changes.

Thanks again for supporting this important work.

Michele

From: Konstantin Lyashchenko [mailto:KLyashchenko@chembio.com]

Sent: Thursday, August 10, 2006 6:34 PM

To: Miller, Michele

Subject: RE: Further testing of elephants

Hi Michele,

Attached is the RT images obtained with the sera from Punch and Mikki we received today (two on the left). Punch looks reactive while Mikki is clean. We noticed that we had already tested these two a year ago and the result was similar. So we found their sera of August 2005 and I re-tested Punch side-by-side with her 2006 sample. You can see that comparison on the right - no change. MAPIA last year was negative for both elephants, so I think that one is false-positive by RT. But we will run MAPIA with the recent samples next week to confirm this.

Best regards,

Konstantin (RBB)

12.May Review of weekly progesterone data from 12/2/07 - 2/26/08 shows no cycling as of yet. (RBB)

5.Jun Parasitology examination: (ROUTINE EXAMINATION) Fecal sample.

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 48 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN

LOXODONTA AFRICANA (no subsp)

Sex: Female

Acc. #: 101038

African elephant
Name: MIKKI

MedARKS%20Reports[1]
Age: 22Y 10M Est Birth: 26.Sep.1985

.....2008...

5.Jun NO PARASITES SEEN

Printed on: 16.Jul.2008

/ISIS/MedARKS/5.53

- page 1 -

Medical History Report - Summary for Individual Specimen
LOUISVILLE ZOOLOGICAL GARDEN
